

What is claimed is:

1. A method of manufacturing a surface acoustic wave element, said method comprising the steps of:

providing a piezoelectric substrate having an interdigital transducer, said interdigital transducer having a higher density than said piezoelectric substrate; and
ion bombarding said interdigital transducer and said piezoelectric body simultaneously.

2. The method of claim 1, wherein said step of ion bombarding includes the step of reducing the thickness of said interdigital transducer and said piezoelectric body.

3. The method of claim 1, wherein a plurality of the interdigital transducers and a plurality of reflectors are formed during said step of ion bombarding.

4. The method of claim 3, further comprising the step of cutting the piezoelectric substrate at a portion where the plurality of interdigital transducers and the reflectors are not located to form a plurality of surface acoustic wave elements.

5. The method of claim 1, wherein the step of ion bombarding said interdigital transducer and said piezoelectric body includes the step of applying at least one of Ar gas, carbon fluoride gas, a chlorine gas, and an N₂ gas to said interdigital transducer and said piezoelectric body.

6. A method of manufacturing a surface acoustic wave device, said method comprising the steps of:

providing a piezoelectric body;

disposing a metal film on the piezoelectric body, said metal film having a higher density than said piezoelectric body;

forming a plurality of interdigital transducers on the piezoelectric body;

cutting said piezoelectric body into a plurality of surface acoustic wave elements, each of said surface acoustic elements having at least one interdigital transducer;

simultaneously etching said at least one interdigital transducer and said piezoelectric body; and

packaging at least one of the surface acoustic wave elements.

7. The method of claim 6, wherein said step of etching includes adjusting the thickness of said interdigital transducer and said piezoelectric body.

8. The method of claim 6, wherein said step of etching includes ion bombarding said at least one of the interdigital transducers and said piezoelectric body.

9. The method of claim 6, further comprising the step of ion bombarding said at least one of the interdigital transducers and said cut piezoelectric body after said step of packaging.

10. The method of claim 6, further comprising the step of adjusting the thickness of said metal film.

11. The method of claim 10, wherein said step of adjusting the thickness is performed by etching said metal film using a wet etchant.

12. The method of claim 6, wherein said step of etching includes ion bombarding said at least one of the interdigital transducers and said piezoelectric body by applying at least one of Ar gas, carbon fluoride gas, a chlorine gas, and an N₂ gas to said interdigital transducers and said piezoelectric body.

13. A method of manufacturing a piezoelectric device, said method comprising the steps of:

providing a wafer;

forming a plurality of interdigital transducers on the wafer;

forming a plurality of surface acoustic wave elements, each of said surface acoustic wave elements having at least one interdigital transducer;

packaging at least one of said surface acoustic wave elements; and
adjusting a frequency of said packaged surface acoustic wave element.

14. The method of claim 13, wherein said step of adjusting the frequency includes ion bombarding said surface acoustic wave element.

15. The method of claim 13, further comprising adjusting a frequency of at least one of said surface acoustic wave elements prior to said step of packaging.

16. The method of claim 13, wherein said step of adjusting the frequency includes ion bombarding by applying at least one of Ar gas, carbon fluoride gas, a chlorine gas, and an N₂ gas to said surface acoustic wave element.

17. The method of claim 13, wherein said step of adjusting the frequency includes etching said interdigital transducers and wafer.

18. The method of claim 13, further comprising disposing a metal film on said wafer.

19. The method of claim 18, further comprising wet etching said metal film.

20. The method of claim 13, further comprising the step of cutting the wafer at a portion where the plurality of interdigital transducers are not located to form the plurality of surface acoustic wave elements.